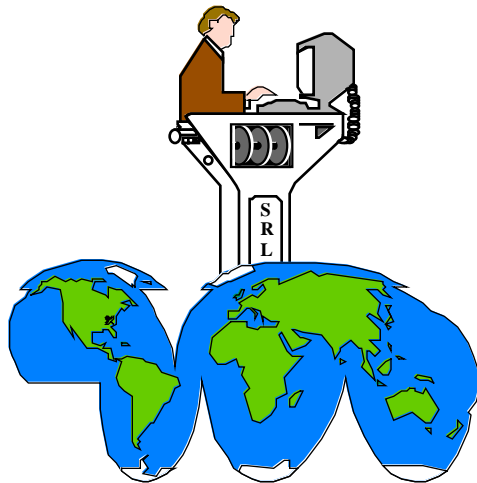


TEAMING: BUILDING A LEARNING ORGANIZATION

**Farrokh Mistree
&
Janet K. Allen**

**Systems Realization Laboratory
George W. Woodruff School of Mechanical Engineering
Georgia Institute of Technology
Atlanta, Georgia 30332-0405, USA**
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at

**National Center for Advanced Technologies
February 12, 1997**

OBJECTIVES

- ***Understanding Teaming.***
- ***What is a Learning Organization?***
- ***The Learning Disciplines***
- ***Learning Disabilities in an Organization / Team***
- ***Systems Archetypes***
- ***Developing New Capacities***
- ***And Finally***

TEAMING - PERSPECTIVES

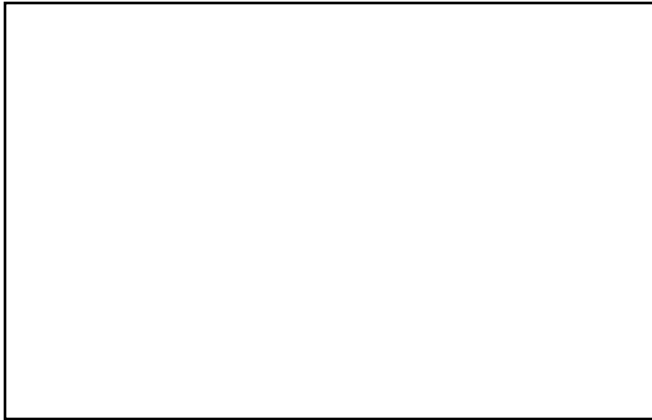
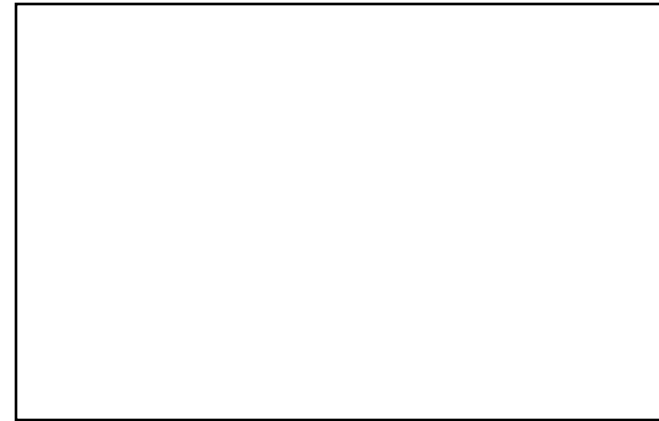
Teaming is a learned activity

As a team learns the problem is being solved

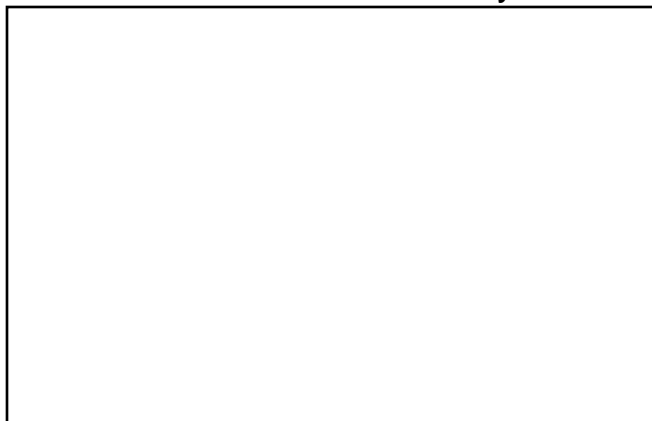
Teams progress only through individuals who learn. Individual learning does not guarantee team learning. But without it no team learning occurs. Ergo problem is not solved

CHARACTERISTICS OF A GOOD TEAM OF A BAD TEAM

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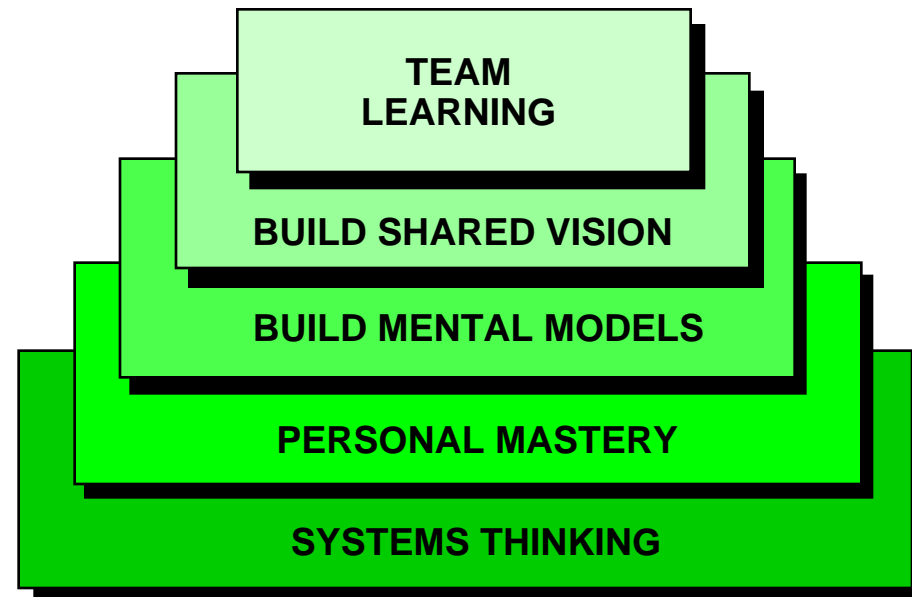
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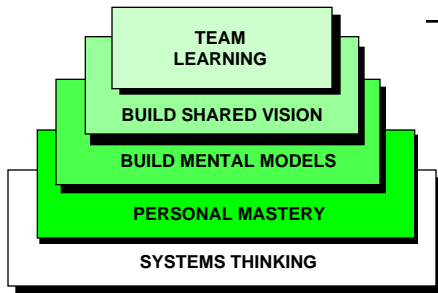
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THE LEARNING DISCIPLINES

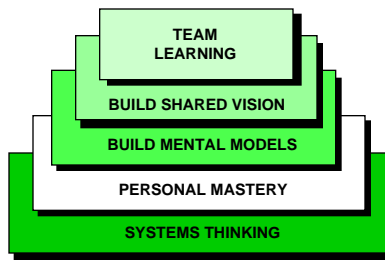


Peter Senge, The FIFTH DISCIPLINE: The Art of the Learning Organization, Doubleday, 1990



SYSTEMS THINKING

- **PRACTICES (WHAT YOU DO)**
 - System Archetypes
 - Simulation
- **PRINCIPLES (GUIDING IDEAS AND INSIGHTS)**
 - Structure Influences Behavior
 - Policy Resistance
 - Leverage
- **ESSENCES (STATE OF BEING OF THOSE WITH HIGH LEVEL MASTERY IN THE DISCIPLINE)**
 - Holism
 - Interconnectedness



PERSONAL MASTERY

- **PRACTICES**

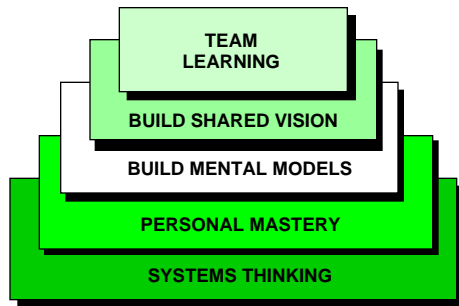
- Clarifying Personal Vision
- Holding Creative Tension
 - Focusing on the Result
 - Seeing Current Reality

- **PRINCIPLES**

- Vision
- Creative Tension vs. Emotional Tension
- Subconscious

- **ESSENCES**

- Being
- Generativeness
- Connectedness



MENTAL MODELS

- **PRACTICES**

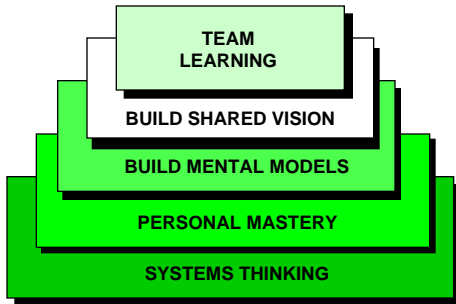
- Distinguishing "data" from abstractions based on data.
- Testing Assumptions
- "Left-Hand" Column

- **PRINCIPLES**

- Espoused theory vs. theory in use.
- Ladder of inference
- Balance inquiry and advocacy

- **ESSENCES**

- Love of truth
- Openness



BUILDING SHARED VISION

- **PRACTICES**

- **Visioning Process**

- Sharing personal visions
 - Listening to others
 - Allowing freedom of choice

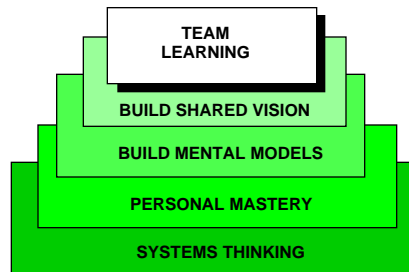
- **Acknowledging current reality**

- **PRINCIPLES**

- Shared vision as "hologram"
 - Commitment vs. compliance

- **ESSENCES**

- Commonality of purpose
 - Partnership



TEAM LEARNING

- **PRACTICES**

- Suspending assumptions
- Acting as colleagues
- Surfacing own defensiveness
- "Practicing"

- **PRINCIPLES**

- DIA LOGOS
- Integrate dialogue and discussion
- Defensive routines

- **ESSENCE**

- Collective Intelligence
- Alignment

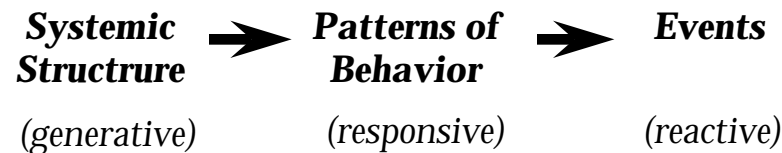
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LEARNING DISABILITIES IN AN ORGANIZATION

- **I am my position.**
- **The enemy is out there.**
- **The illusion of taking charge.**
- **The fixation on events.**
- **The delusion of learning from experience.**
- **The myth of the management team.**

PRISIONERS OF THE SYSTEM OR PRISIONERS OF OUR OWN THINKING?



- **Structure influences behavior.**
 - When placed in the same system, people, however different tend to produce similar results.
- **Structure in human systems is subtle.**
- **Leveraging often comes from new ways of thinking.**

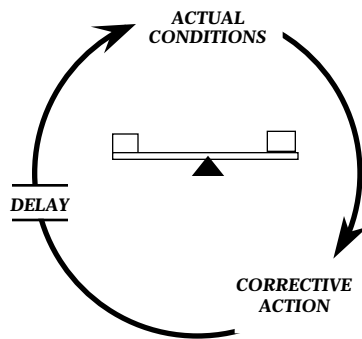
UNDERSTANDING SYSTEMS THINKING

- Today's problems come from yesterday's solutions.
- The harder you push, the harder the system pushes back.
- Behavior grows better before it grows worse.
- The easy way out usually leads back in.
- The cure is worse than the disease.
- Faster is slower.
- Cause and effect are not closely related in time and space.
- Small changes can produce big results - but the areas of highest leverage are often the least obvious.
- You can have your cake and eat it too - but not at once.
- Dividing an elephant in half does not produce two small elephants.
- There is no blame.

OBJECTIVES

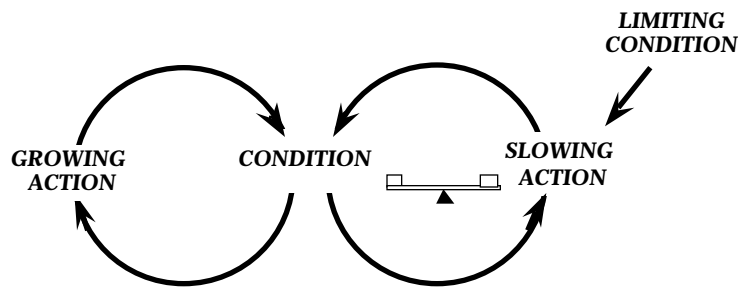
- *Understanding Teaming.*
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BALANCING PROCESS WITH DELAY



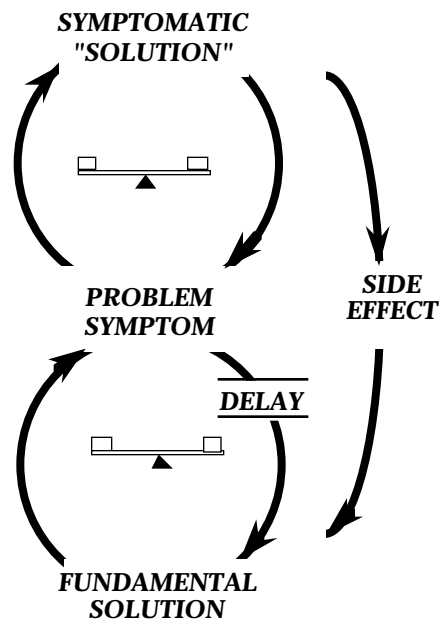
- **Description:** A person, or group, acting toward a goal adjusts their behavior in response to delayed feedback. May give more corrective action than is needed.
- **Symptom:** "We thought we were in balance, but we overshot the mark."
- **Management Advice:** Sluggish system, aggressiveness produces instability. Either be patient or make system more responsive.

LIMITS TO GROWTH



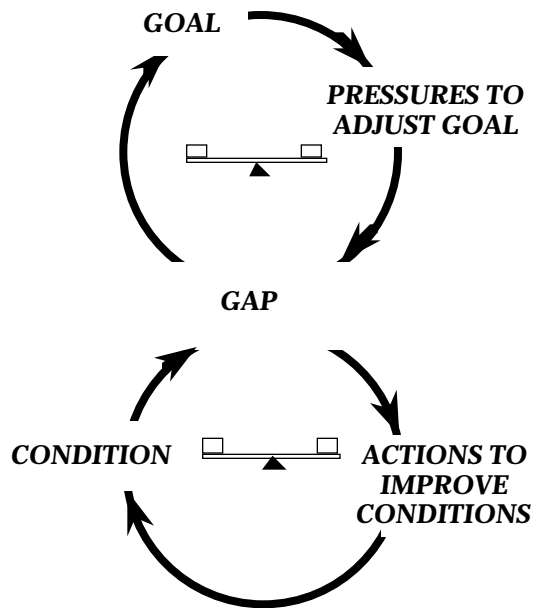
- **Description:** Process feeds on itself to produce accelerating expansion, then growth begins to slow and come to a halt.
- **Symptom:** "The harder we run the more we seem to stay in place."
- **Management Advice:** Don't push on reinforcing growth process - remove or weaken source of limitation.

SHIFTING THE BURDEN



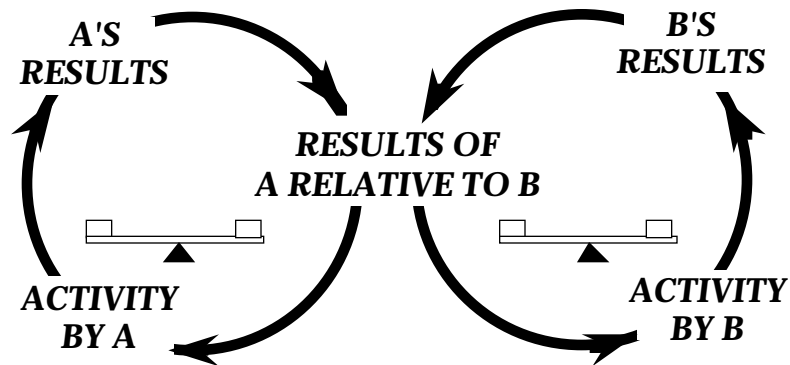
- **Description:** A short-term solution is used to correct a problem - seemingly positive results. Over time, capabilities for fundamental solution may atrophy leading to greater reliance on symptomatic solution.
- **Management Advice:** Focus on fundamental solution.

ERODING GOALS



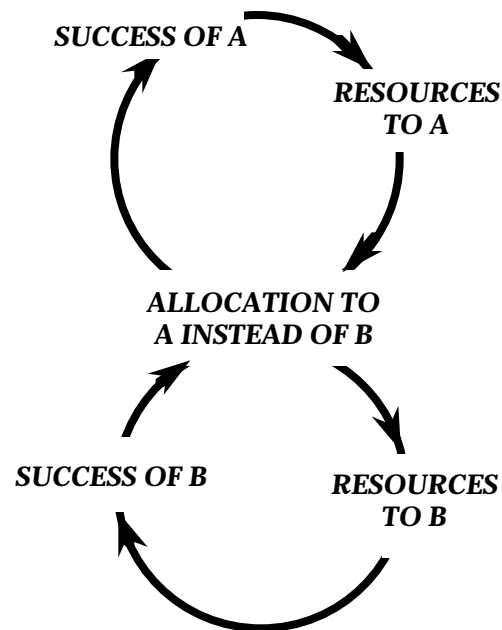
- **Description:** Short-term solution involves letting a long-term fundamental goal decline.
- **Symptom:** It's ok if the performance standard slips a little, just until the crisis is over.
- **Management Advice:** Hold the vision.

ESCALATION



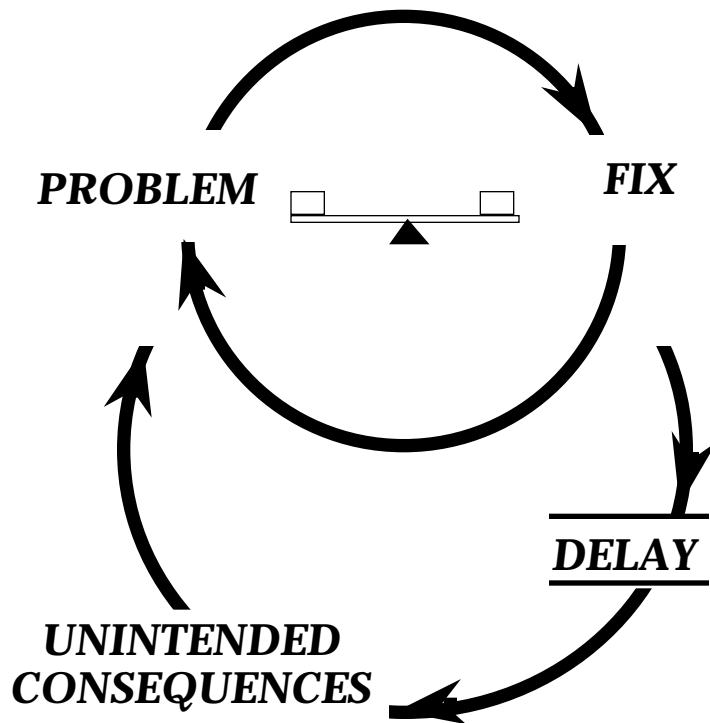
- **Description:** Two people or organizations see their welfare as depending on relative advantage over each other. When one is threatened, the other works harder to catch up.
- **Symptom:** "If our opponent would only slow down, then we could stop fighting this battle and get some other things done."
- **Management Advice:** Look for ways both sides can achieve objectives

SUCCESS TO THE SUCCESSFUL



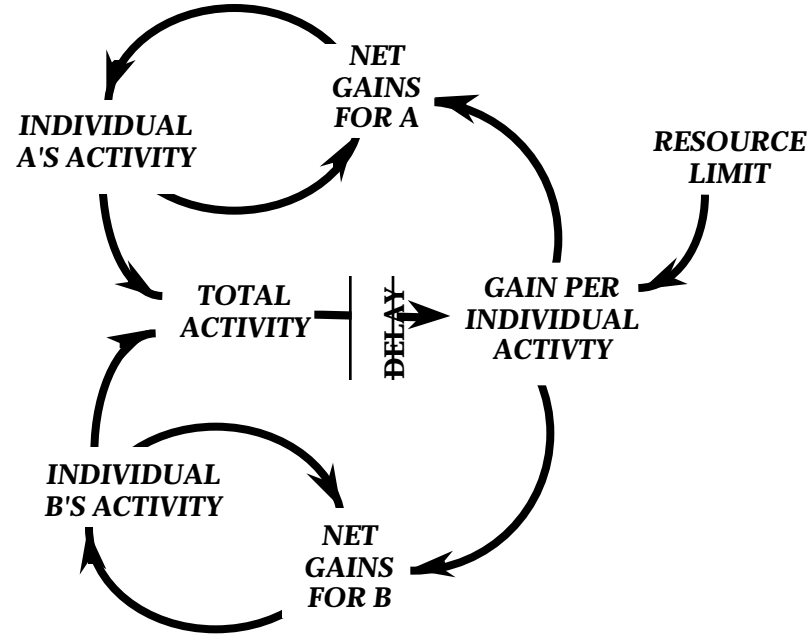
- **Description:** Two activities compete for limited resources, successful one gains more support, becomes more successful.
- **Symptom:** One of two interrelated activities, groups or individuals is beginning to do very well, the other is struggling.
- **Management Advice:** Look for the overarching goal for balancing achievement of both choices.

FIXES THAT FAIL



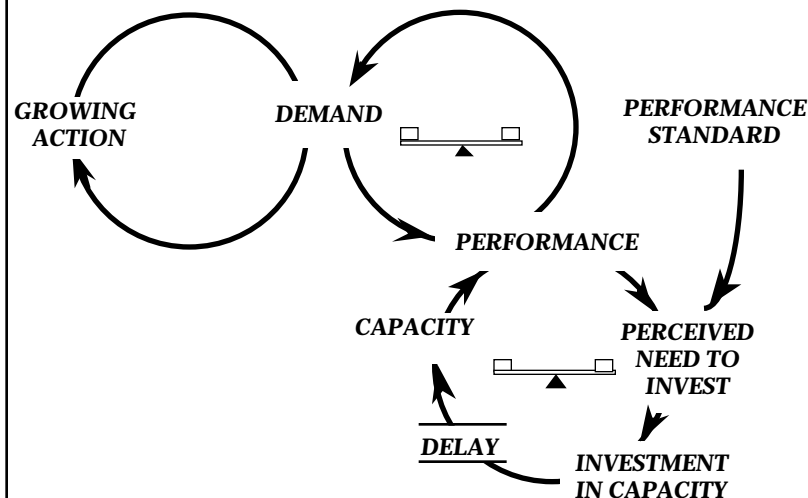
- **Description:** A fix, effective in the short term, has unforeseen long-term consequences.
- **Symptom:** "It's always worked before, why isn't it working now?"
- **Management:** Maintain focus on the long term.

TRAGEDY OF THE COMMONS



- **Description:** Individuals use a commonly available but limited resource on the basis of individual need. Eventually the resource is significantly depleted.
- **Symptom:** "There used to be plenty for everyone, now things are getting tougher."
- **Management:** Manage and regulate the commons - either self-regulation or peer pressure.

GROWTH AND UNDERINVESTMENT



- **Description:** Growth approaches a limit which can be pushed into the future if the firm, or individual invests in additional capacity. Investment must be aggressive and rapid enough to forestall reduced growth or it will never get made.
- **Symptom:** "Well, we used to be the best, and we'll be the best again, but right now we have to conserve our resources."
- **Management Advice:** Build capacity in advance of demand, hold the vision.

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DEVELOPING NEW CAPACITIES

- **STAGE ONE: NEW COGNITIVE CAPACITIES**
- **STAGE TWO: NEW ACTION RULES**
- **STAGE THREE: VALUES AND OPERATING ASSUMPTIONS**

-
- **STAGE ONE: NEW COGNITIVE CAPACITIES**
 - See and speak a new language.
 - Difficult to translate these new cognitive and and linguisyic competencies into new actions.

DEVELOPING NEW CAPACITIES

- **STAGE ONE: NEW COGNITIVE CAPACITIES**
- **STAGE TWO: NEW ACTION RULES**
- **STAGE THREE: VALUES AND OPERATING ASSUMPTIONS**

• **STAGE TWO: NEW ACTION RULES**

- As old assumptions “loosen” people begin to experiment with new action rules based on new assumptions.
- They will find it difficult to access or string together new rules when under stress.

DEVELOPING NEW CAPACITIES

- **STAGE ONE: NEW COGNITIVE CAPACITIES**
- **STAGE TWO: NEW ACTION RULES**
- **STAGE THREE: VALUES AND OPERATING ASSUMPTIONS**

-
- **STAGE THREE: VALUES AND OPERATING ASSUMPTIONS**
 - Can string together rules that reflect new action values and operating assumptions.
 - Can enact rules under stress and ambiguity, and continue to aid their own and others learning.
 - Begin speaking in their own voice.

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AND FINALLY WHAT DID YOU LEARN?

- Please do not write in this booklet. Instead, write in your workbook.

READINGS

Peter Senge, THE FIFTH DISCIPLINE: The Art of the Learning Organization, Doubleday, 1990

Michael Brassard, THE MEMORY JOGGER PLUS: Featuring the Seven Management and Planning Tools, GOAL/QPC, 1989

Pete Scholtes, THE TEAM HANDBOOK: How to use Teams to Improve Quality, Joiner, 1988

About the SRL Website



- Main Web Site
 - <http://www.srl.gatech.edu/>

The Virtual Product Realization Studio & Design Learning Simulator

- <http://www.srl.gatech.edu/DLS/>
- Used by undergraduates in their first design class
- Highlighted:
 - Tour of the Website
 - Current quarter



7 Management and Planning Tools Page

- http://www.srl.gatech.edu/education/ME3110/software/tqm_templates/
- **Requires Inspiration Software**

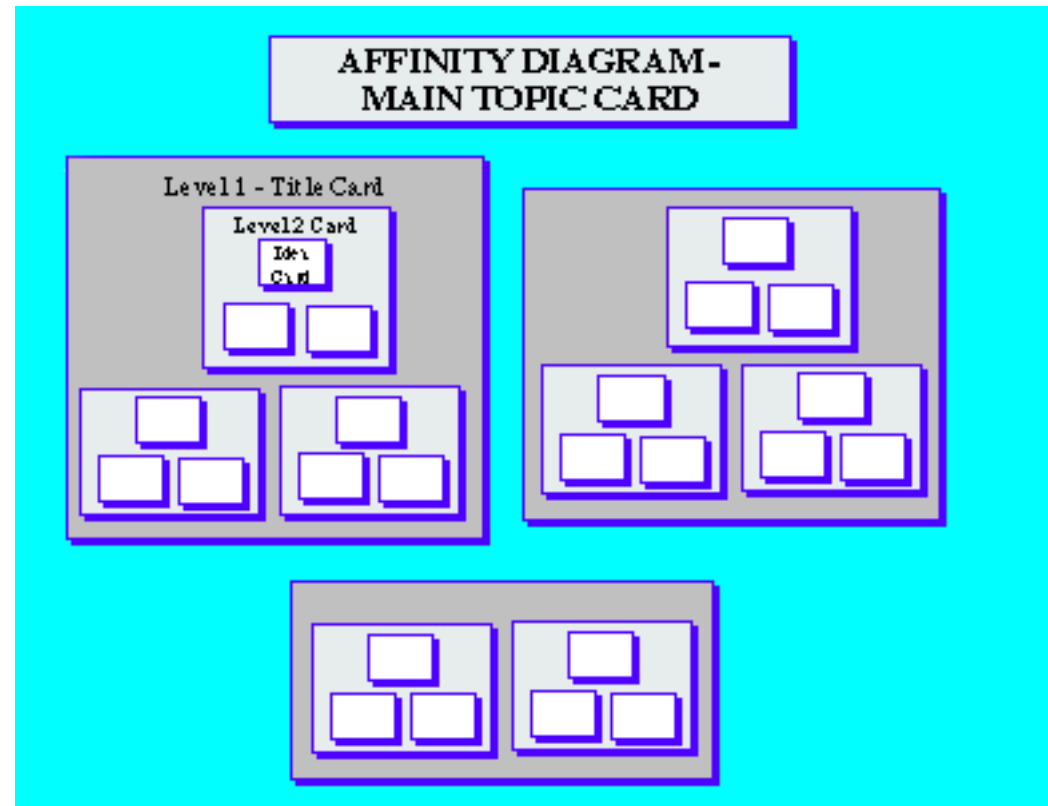


Total Quality Management Templates

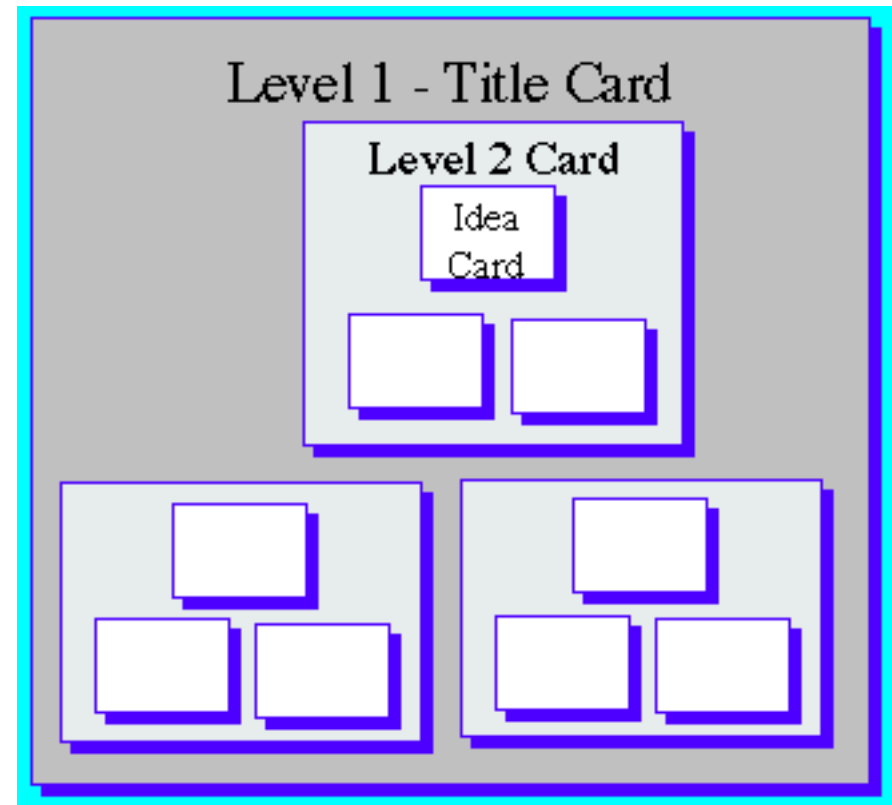
****Inspiration 4.1 is needed to use these templates****

- Affinity Diagram Template
- Interrelationship Diagram Template
- Prioritization Matrix Template
- Tree Diagram Template
- Activity Network Diagram Template
- Mind Map Template
- Matrix Diagram (6x6x6) Template
- Matrix Diagram (4x4x4) Template
- House of Quality (12x12) Template
- Partial House (12x12) Template
- Partial House (6x6) Template
- PDPC Template

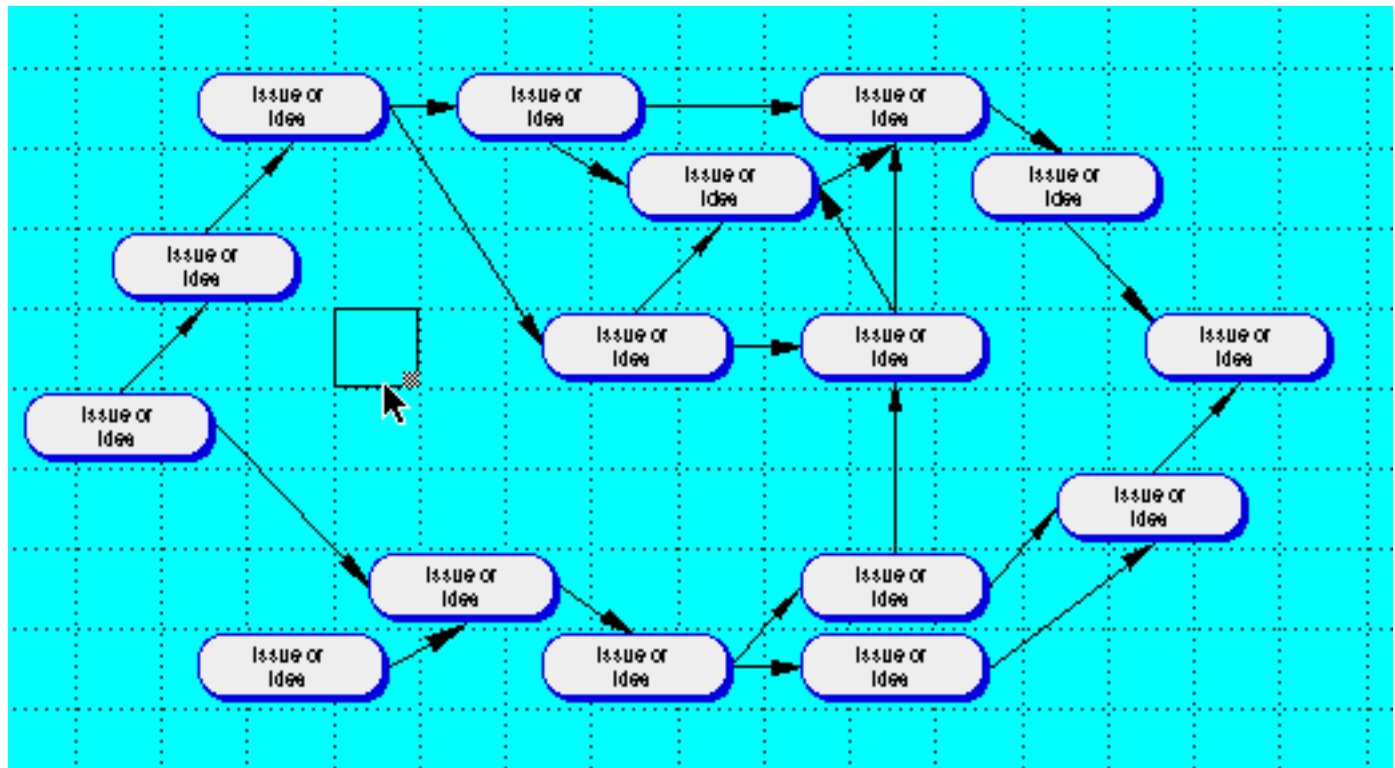
Affinity Diagram



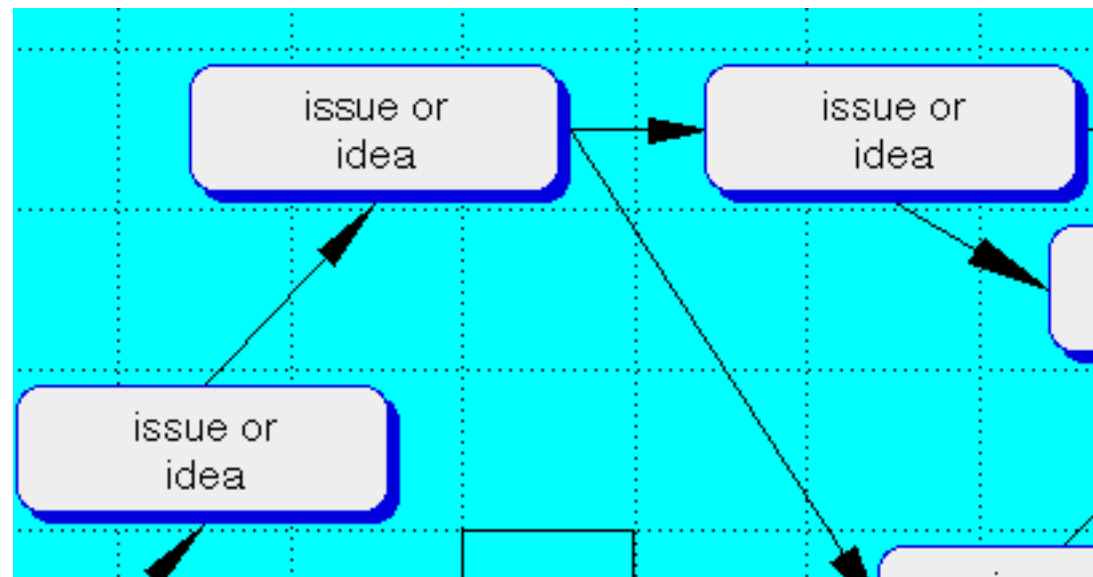
Affinity Diagram Detail



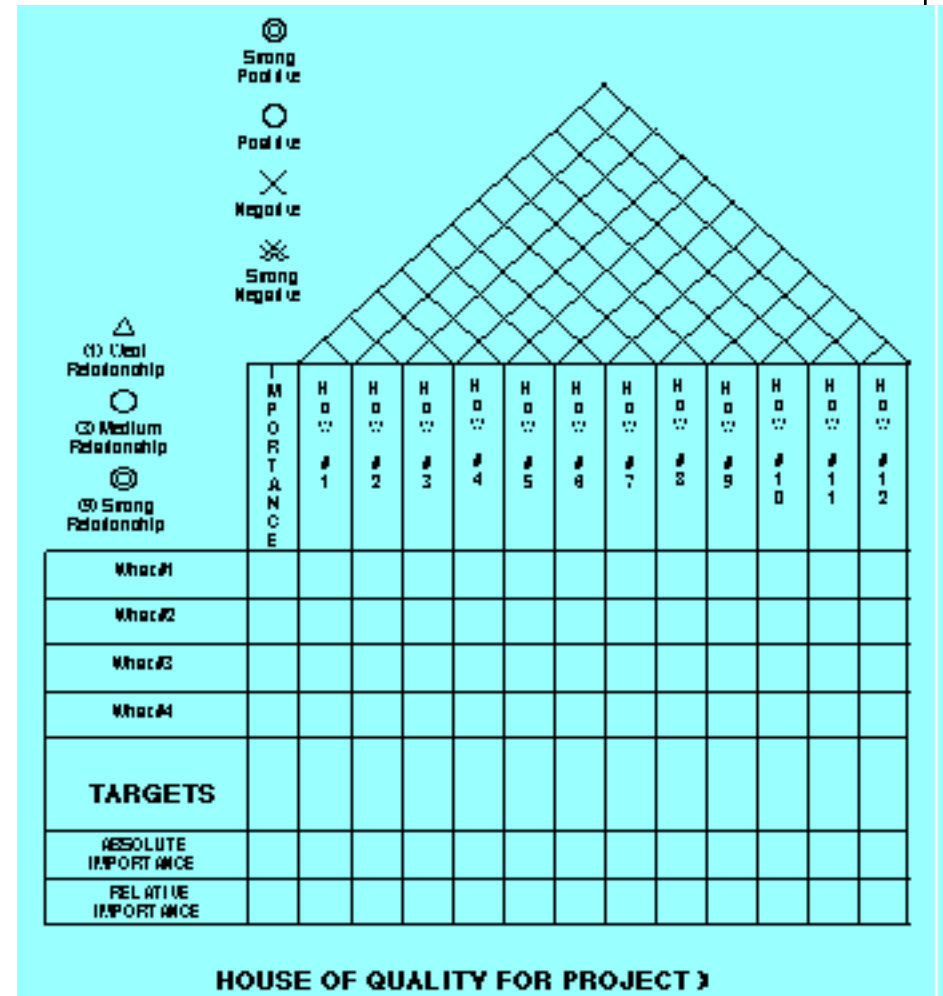
Interrelationship Diagram



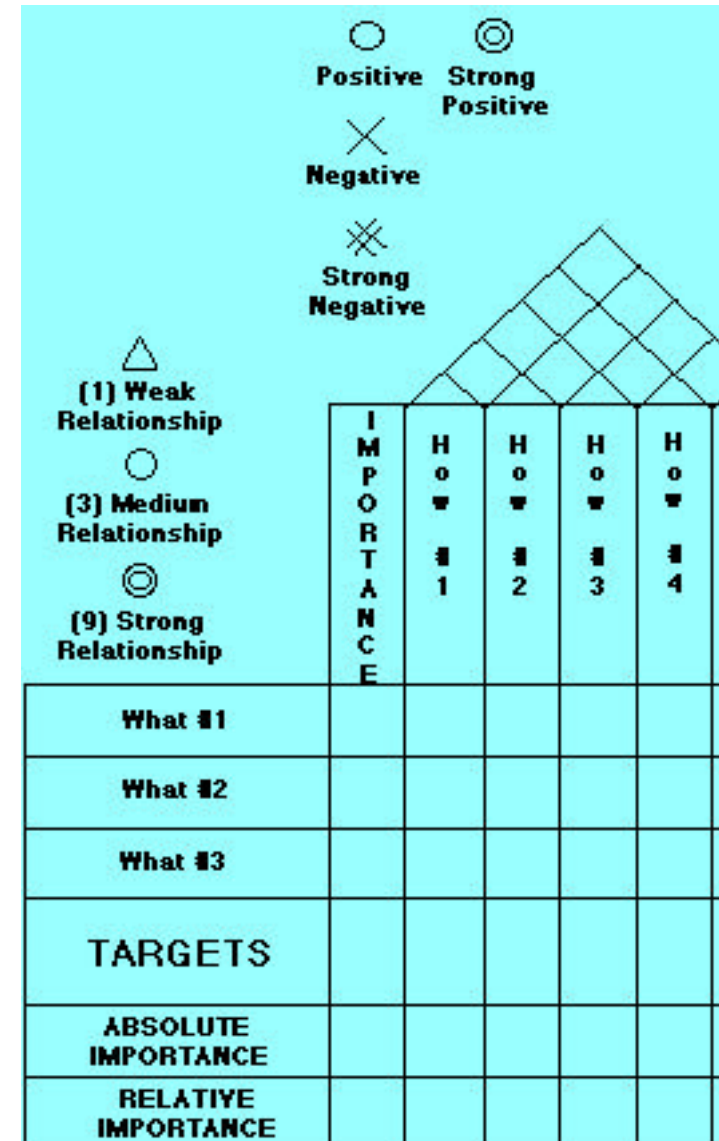
Interrelationship Diagraph Detail



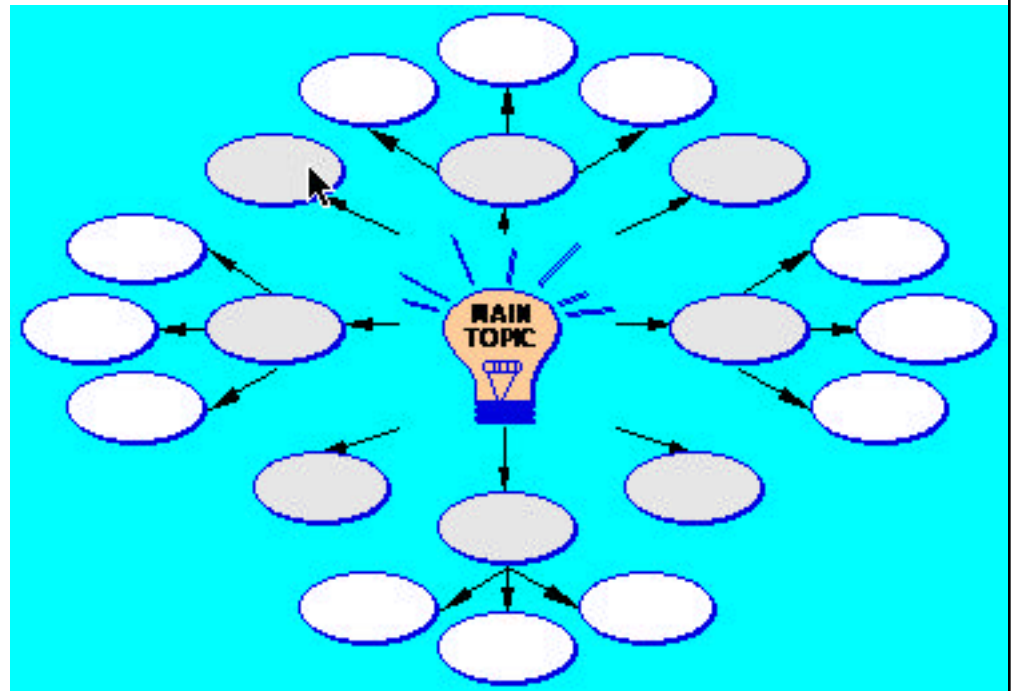
The House of Quality



House of Quality Detail



Mind Map



Tree Diagram

